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JOINT EFFORTS: MOVING THE ARMY'S INTRA-THEATER AIR CARGO
WITH THE AIR FORCE C-27J SPARTAN

by

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Abstract

The purpose of this research is to determine how the Air Force can fill the tactical intra-theater cargo airlift role for the Army, based on current airlift requirements and platforms. In 2004, the US Army and US Air Force both began pursuing a small, more capable, fixed-wing aircraft for intra-theater airlift operations. The C-27J Spartan was chosen to be the Joint solution with both Services scheduled to receive aircraft. In 2010, federal budget reductions removed the C-27J from the Army inventory, transferred the program over to the Air Force, and reduced the projected number of delivered aircraft from 78 to 38. This paper uses an exploratory case study to determine how the Air Force can fully support the Army's time-sensitive and mission-critical airlift requests using the C-27J aircraft. This paper discusses current intra-theater airlift assets and cargo movement systems in use by the Army and Air Force and examines the airlift requests and fulfillments from Army units over the course of a year. Then, using the hypothetical availability of Air Force C27Js during that time, it analyzes the Air Force's ability to support such requests. Through an improved prioritization method and changes to the theater airlift system, the Air Force will be able to support the Army's time-sensitive, mission-critical airlift with its C-27J Spartan aircraft.

SECTION 1: INTRODUCTION

The continued deployment of military personnel and equipment around the world in support of contingency operations such as Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn has led to an increased amount of stress on the US Army's aging aircraft, specifically on the CH-47s, C-23s, and C-12s, the aircraft responsible for delivering small amounts of intra-theater cargo. The Army has attempted to use the Air Force intra-theater cargo system to relieve some of this stress and supplement its airlift capabilities, but because of the restrictions and inherent delays of the Air Force's system, the Army has had to rely on its organic—Army-owned—airlift assets to move time-sensitive and mission-critical (TS/MC) cargo over the “last tactical mile” to its final destination.

Aiming to alleviate the burden on the Army's airlift fleet, in 2005, the Army initiated a program named the “Future Cargo Airlift (FCA)” program. The purpose of this program was to develop a small, fixed-wing aircraft capable of delivering cargo to austere airfields at the end of the supply chain. In June 2006, the combination of the Army's FCA program and the Air Force's analogous “Light Cargo Aircraft (LCA)” program resulted in the creation of the Joint Cargo Aircraft (JCA) program. The goal of the JCA program was to procure a more efficient and effective aircraft than those already available. From that program, the C-27J Spartan aircraft was chosen (see Figure 1).



Figure 1. C-27J Spartan
Courtesy of USAF

Initial studies by the Joint Requirements Oversight Council (JROC) set the required number of C-27Js at 78 to meet the Army and Air Force's needs; however, in 2010, budget cuts handed the JCA program over to the Air Force. The program transfer resulted in the removal of all C-27Js from the Army and limited the number of aircraft to 38, less than half of the JROC's determination. The transfer of the JCA program to the Air Force, as well as the reduction in the number of C-27J aircraft to be delivered, foiled the Army's plans to replace their aging airlift platforms and forces the Air Force to fill the intra-theater airlift gap. So far, the Army has been supporting its own airlift needs with C-23s, C-12s, and CH-47s, but aging aircraft and terrain challenges (specifically in Afghanistan) favor a newer, smaller, fixed-wing aircraft.

Both Army and Air Force senior leadership have expressed concern about the ramifications of these seemingly drastic changes as a result of budget reductions: the Army will not be provided a necessary airlift platform to reduce the burden on its older and less-capable aircraft, and the Air Force will be expected to continue to support the Army's airlift requests as much as possible, thereby reducing the availability of the aircraft for other designated Air Force airlift purposes.¹ Given this concern, the following question is addressed in this research paper: How can the Air Force fully support, if at all, the Army's time-sensitive and mission-critical intra-theater airlift requests with its C-27J Joint Cargo Aircraft while at the same time continuing

to fulfill its own intra-theater airlift obligations? This study will show that the Air Force can only support the Army's intra-theater airlift requests with its existing C-27Js if the support is accomplished through an improved mission prioritization method and with significant changes to the Joint theater airlift request system.

An improved prioritization method, which would place importance above cost and effectiveness over efficiency, would allow TS/MC missions to be tasked faster than routine cargo movements. Also, changes to the Joint theater airlift request system, mainly with respect to the wait time after making a request, would allow the Army to quickly request Air Force assets for TS/MC missions with fewer disruptions to the theater airlift system, as well as reduce the levels of approval it takes to get from the Army ground commander's request to actual movement by the Air Force.

This research paper will use an exploratory case study to determine how the Air Force can fully support the Army's time-sensitive and mission-critical airlift requests using the C-27J aircraft while continuing to meet its own ongoing Air Force intra-theater airlift requirements. After discussing the current intra-theater airlift assets and cargo movement systems in use by the two Services, this paper will examine the airlift requests and fulfillments from Army units over a 26-month period. Then, using the hypothetical availability of Air Force C-27Js during that time, it will analyze the Air Force's ability to support such requests. Based on those results, this paper will make recommendations on how the Air Force system and C-27J aircraft employment can be modified to support the Army.

SECTION 2: BACKGROUND

Current Army Intra-theater Airlift Capabilities

To understand why the JCA was first pursued and acquired, it is prudent to examine Army

aircraft and their capabilities. The current Army intra-theater airlift assets primarily consist of the fixed-wing C-23 Sherpa and the rotary-wing CH-47 Chinook. The C-23 Sherpa is a small, twin-engine, propeller aircraft that has been in use by the Army since the early nineties (see Figure 2). It is the Army's only true cargo airplane.



Figure 2. C-23B Sherpa
Courtesy of defenseindustrydaily.com

The CH-47 Chinook is a twin-engine, tandem-rotor, heavy-lift helicopter (see Figure 3). Its primary mission is to move troops and supplies on the battlefield. It has been in use by the Army since 1962.



Figure 3. CH-47 Chinook
Courtesy of www.boeing.com

Table 1 presents the separate Army aircraft specifications to help show their capabilities:

Table 1. Army Aircraft Specifications

	C-23 Sherpa²	CH-47 Chinook³
Max speed	190 kts/218 mph	143 kts/164 mph
Max range	225 mi	265 mi
Interior dimensions	36 ft x 5.5 ft x 6.5 ft (1287 cu ft)	30.5 ft x 7.5 ft x 6.5 ft (504 cu ft)
Wing/rotor span	74 ft 8 in	60 ft 0 in
Length	58 ft 0.5 in	98 ft 10 in
Height	16 ft 3 in	18 ft 11 in
Empty weight	14,727 lb	23,401 lb
Max takeoff weight	22,900 lb	50,000 lb
Max cargo weight	7,000 lb	24,000 lb

Examining the data, the Chinook's maximum cargo weight is 24,000 pounds, nearly six times that of the C-12 and more than three times that of the C-23. Due to the larger cargo capacity of the CH-47, the bulk of the workload of the Army's intra-theater cargo airlift has fallen on the aging helicopter, with the CH-47 fleet amassing over 1.2 million hours since October 2001.⁴

The terrain challenges present in Afghanistan, combined with the austere and unimproved nature of many of the airfields there and in Iraq, favor a more capable, small, fixed-wing aircraft, able to take over and alleviate the CH-47 fleet's workload. One might surmise that the C-23 could help solve that problem; however, the C-23 is unpressurized, so flight over 10,000 feet is restricted. Unfortunately, Afghanistan's high elevation prevents deployment of the C-23 to the country and limits its use to Iraq. Retired General John Handy, former commander of US Transportation Command said that after September 11, 2001, in Afghanistan, "We had to hop, skip and jump rotary wing forces, or airdrop by C-17 or C-130, or find another runway within reasonable proximity to land on."⁵

Army and Air Force Intra-theater Doctrine

Army and Air Force airlift doctrine differences affect how missions are fulfilled. Currently, Army doctrine typically places aviation units under tactical control (TACON) of the ground commander. In other words, Army airlift is attached to the unit; the commander can essentially call on an aircrew to deliver his cargo at any time. This allows for flexibility in the type of cargo that can be moved, as well as the timing on when it can be moved. Cargo movements given high priority by the Army commander due to time constraints or mission importance are deemed time-sensitive/mission-critical missions. The Department of Defense 2009 Quadrennial Roles and Missions Review Report defines TS/MC missions as follows:

Time sensitive/mission critical mission requirements create a demand for delivery of equipment, supplies, and personnel that are generally non-routine in nature and must be delivered to the point of need/point of effect in an accelerated time period. These demands require the lift capacity to be supremely responsive to the supported commander's immediate operational or tactical priorities. TS/MC demands cannot routinely be accommodated via the planned resupply and movement processes where efficiency is the primary consideration.⁶

TS/MC cargo loads may be small but critical to mission success. Furthermore, TS/MC missions may require delivery of cargo into smaller, more forward-operating bases, where larger cargo aircraft, such as the C-17 and even the C-130, cannot be supported. The combination of these factors favors a smaller, yet capable, aircraft under tactical control of the ground commander.

In contrast, Air Force air mobility doctrine tends toward centralized control, where the limited number of assets plays a major factor in determining the level of support. In the Joint theater, where Air Force assets make up the majority of the airlift aircraft, the Air Tasking Order, Special Instructions, and Airspace Control Order, all parts of the Joint Forces Air Component Commander's airspace system in the Area of Responsibility, encourage a unified effort focused on efficiency and de-confliction, reducing the likelihood and availability of direct support to

Army ground commanders. While Air Force doctrine acknowledges that organic airlift is part of the airlift equation, Air Force Doctrine Document (AFDD) 2-6.1 states, “Organic airlift is primarily a Service responsibility... provid[ing] specialized lift to specific users, usually between terminals within a theater.”⁷ This definition does not consider using Air Force airlift to support Army units. Direct support to another Service’s unit is also discussed in AFDD 2-6.1, but at a high, Joint Forces Commander level, as opposed to a lower-level, Army unit commander.⁸

Current Army and Air Force Airlift Request Systems

Figure 4 depicts the Army (green) and Air Force (blue) air tasking processes for comparison and contrast.

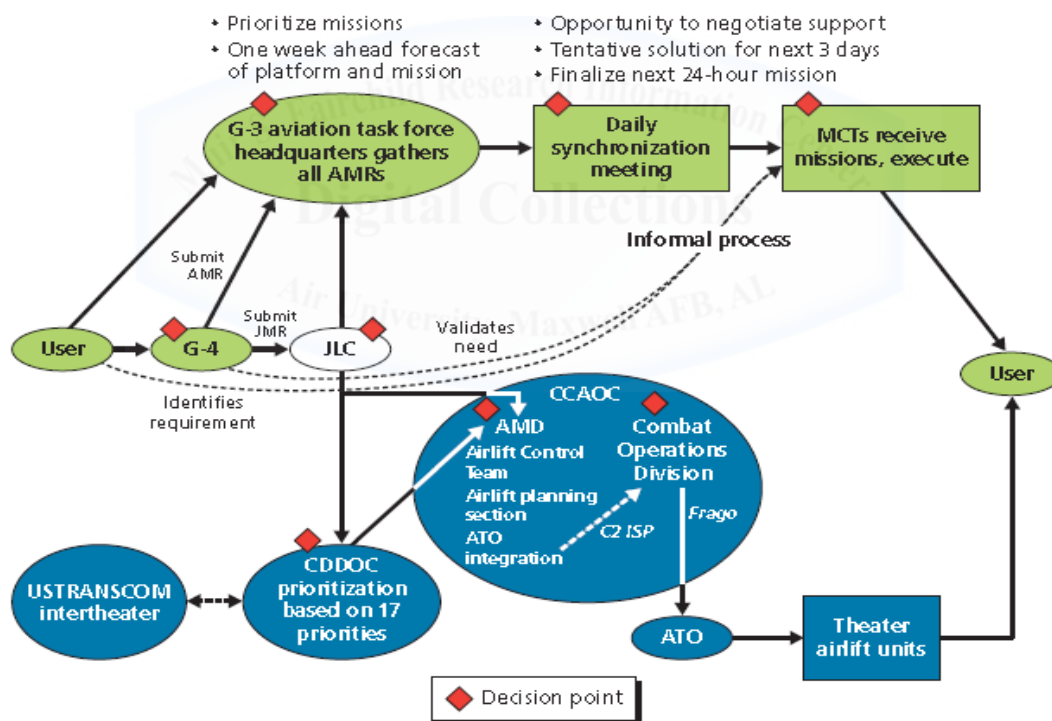


Figure 4. Theater Air Tasking Process⁹

Notice the differences between the processes. The Air Force (blue) half of the figure reveals a process involving several organizations and decision points prior to executing any mission, including TS/MC missions. The Air Force process reveals no way to prioritize or quickly task a

TS/MC mission, as all missions are treated similarly. The Air Force airlift request process is explained in more detail below, using a hypothetical Army-generated airlift request.

In contrast, the Army's process allows for prioritization. First, after the user identifies a TS/MC item requiring movement and communicates that need up the logistics chain of command, the battalion logistics officer (S-4) subsequently validates that need. The S-4 then submits a Joint Mission Request (JMR) to the Joint Logistics Center (JLC) for the cargo to be moved through general support, or the common-airlift pool, most likely an Air Force asset. If the materiel is available in theater, then the JMR is forwarded to the CENTCOM Deployment Distribution Operations Center (CDDOC) in Kuwait: "The CDDOC manages the assignment of materiel to all common-user aircraft in CENTCOM, validates the requirement to move the item by air, and prioritizes the JMR on a 1–17 point scale."¹⁰ After prioritization, the request is sent to the Air Mobility Division (AMD) at the Combined Air Operations Center (CAOC) and built into the Air Tasking Order (ATO) for the next 72-hour planning period. Therefore, unless a general officer intercedes, it can be assumed that by using the Air Force system, the TS/MC movement would take at least 72 hours from the Army user's request to fulfillment. In addition, the TS/MC airlift request is competing with all other airlift requests submitted during that same time-frame, possibly reducing its priority. Furthermore, as the Air Force tends to favor efficiency over effectiveness, if the amount of materiel to be moved is small, the movement may be delayed until an aircraft is more fully loaded. Each of these factors plays into the timeliness of delivering the cargo, resulting in the discounting of the time-sensitivity of the movement.

Looking at the Army (green) half of the figure, the process from request to fulfillment follows. If the size of the cargo permits movement by Army airlift assets, instead of submitting a JMR, the requester submits an Air Movement Request (AMR) for Army airlift. All AMRs are

delivered to G-3 Aviation Task Force Headquarters and prioritized. “The [TS/MC] and lower-priority AMRs are used to build a one-week forecast of the platforms required and the number of missions needed to fulfill the needs.”¹¹ Each day, representatives from the aviation units and the users discuss the urgency of movements at a synchronization meeting. There, they plan the missions over the next 24 hours. If available, the missions are fulfilled using existing rotary-wing routes. If not, they add a direct support mission. The Mission Control Teams (MCTs) then assign that mission to an Army aviation unit that subsequently fulfills it. Compared to the Air Force system, the Army system is decentralized, more direct, and much faster.

In the Army system, there is, however, an even more direct, informal method to meet TS/MC demands. The dashed lines in the figure between the request-originating user, the G-4, and the MCTs indicate a more direct route between the request and fulfillment than through the submission of an AMR. In these cases, the user can bypass the formal request system and attempt to have the item moved on the next available Army aircraft, given there is available space on the aircraft.¹² Although there is no guarantee of availability, this option can significantly speed up delivery for high priority matters, including time-sensitive air taskings, providing flexibility to directing operations that the Air Force does not possess.

Finally, the level of command approval for last-minute changes to mission executions between the Army and Air Force is significant. New taskings within the Air Force's 72-hour ATO window require general officer approval, while new Army taskings require only Colonel-level approval.¹³ Because the Air Force focuses on more efficient airlift operations using all of its available assets, execution of missions is more centralized at a higher level. The Army's more decentralized execution, focused on mission effectiveness, allows for a lower level of approval. Consequently, because of the coordination necessary to add requests within the ATO window,

movement of TS/MC cargo by the Air Force typically takes much longer than cargo moved by organic Army airlift.

Army Future Cargo Aircraft Requirements

The Army Future Cargo Aircraft program's aim was to find a suitable, fixed-wing aircraft that would replace several short, medium, and long-range cargo aircraft, including the C-23 Sherpa, to fill the intra-theater airlift gap. According to the Memorandum of Agreement signed by the Army and Air Force vice chiefs of staff in June 2006, the FCA's primary mission was “on-demand transport of time-sensitive/mission-critical cargo and key personnel to forward deployed Army units operating in a Joint Operations Area.”¹⁴ Due to the characteristics of today's non-contiguous battlespace, with dispersed forces and longer supply distances, the aircraft required a longer range than current rotary-wing aircraft such as the CH-47. Furthermore, “To support the...[Army] Brigade Combat Team (BCT), it would be necessary for mission-critical/time-sensitive supplies and key personnel to be delivered from intermediate staging bases directly to the BCT, often operating in high threat environments in remote, austere locations.”¹⁵

Joint Cargo Aircraft Program Genesis

The Joint Cargo Aircraft program came to be in June 2006 when the vice chiefs of staff of the Army and Air Force signed a memorandum of agreement converging the Services' respective FCA and LCA programs. The Army and Air Force agreed, based on similarities in requirements, to pursue a common fixed-wing airlift platform rather than two separate aircraft. There were several benefits of merging the two programs. First, acquiring the same aircraft would ensure compatibility between Air Force and Army cargo loading, i.e. the dimensions of the cargo pallets and rolling stock (wheeled vehicles). For instance, the Army C-23 Sherpa was not large enough to carry a standard Air Force pallet. Pallets were required to be broken down and reassembled in

a smaller configuration to fit on the Sherpa.¹⁶ Because the larger JCA fit standard-size pallets, the pallet breakdown requirement was removed. Next, with the JCA, the Army would gain the ability to fly into 29 additional Iraqi airfields and an additional 10 airfields in Afghanistan.¹⁷ The addition of 39 airfields to the Army's repertoire would significantly increase its resupply power and reduce the stress on its rotary-wing fleet. There were advantages to the Air Force, as well. A smaller aircraft reduced the amount of "wasted space," which was often the case on the C-130; "The aircraft was frequently not carrying capacity loads, especially when something was needed immediately. There was a significant cost associated with loading up a C-130 with just one pallet of supplies, or 10 people to move when it can carry almost five times that amount."¹⁸ Due to analysis of historical cargo movements, having a cargo aircraft smaller than the C-130 would benefit the Air Force with cost savings and result in higher cargo-movement efficiency.

2010 Budget Effects on the JCA

The effect that the 2010 Federal Budget had on the JCA program was significant. Initially, the total number of JCA planned for delivery was 78, due to the Joint Requirements Oversight Council's 2004 study which validated the need and set the requirement. Nonetheless, the approved 2010 Federal Budget cut the number of C-27Js to 38 and relegated them all to the Air Force. Army leaders insist there have been no significant changes in need since 2004 when the JROC set the requirement at 78 aircraft, and completely withdrawing the C-27J from the Army undermines the Army's plans to use the C27J to replace its aging C-23 and C-12 aircraft.¹⁹ Additionally, no relief will be found for the Army's CH-47 Chinook helicopters in their direct support mission, which is delivering cargo and personnel "the last tactical mile." Both Army and Air Force leaders have expressed serious concerns about reducing the number of aircraft by more than 50 percent and removing the Army from the equation.²⁰

Through analysis of the 2009 Quadrennial Roles and Missions Review Report (QRM), the budget cuts reveal even greater threats to intra-theater operations. The QRM specifically states that “direct support airlift requirements...cannot be routinely satisfied through a common-user airlift service,”²¹ but the Army will not receive any aircraft to help fulfill those requirements. The QRM continues with the necessity of assigning the C-27J to both the Air Force and Army, with the idea that aircraft from both Services would fill both the direct support role and the common-user pool.²² However, since the Air Force will now receive all the C-27Js, but with far fewer than originally contemplated, this idea seems impractical. The end result is that the Air Force will be required to provide more tactical, intra-theater airlift support to the Army, resulting in an additional burden on the Air Force's already busy force.

SECTION 3: ANALYSIS OF ARMY UNITS' AIRLIFT USE

Army Units' Time-sensitive/Mission-critical Airlift Requests

To analyze the fulfillment of Army units' TS/MC requests, one must examine how requests were met, using either organic Army airlift or through the theater airlift system, where movement is typically accomplished with Air Force assets.

Army System/Assets

In Iraq, over a 26-month period between 2004 and 2008, the 171st, 249th, and 641st Aviation Regiments executed 3,185 missions employing the C-23.²³ Mission reports show that of those missions, about 1,300, or 50 per month, supported TS/MC movements. These missions involved movement of equipment and supplies such as helicopter blades, generators, engine parts, ammunition, and blood. Since these movements were all accomplished using the C-23, nothing moved was heavier than 7,000 pounds, and all cargo fit within the confines of the aircraft.

As for Afghanistan, the high, mountainous terrain and the limitations of the unpressurized C-23 restrict the aircraft from being deployed there. Therefore, in Afghanistan, the CH-47 regularly moved TS/MC cargo on their standard resupply routes, accommodating the cargo when space was available, often not coordinated in the advance planning cycle. Due to the nature of how the CH-47s are loaded with TS/MC cargo, there is no qualitative data on how many missions support TS/MC movement, but interviews with aviation unit personnel returning from Afghanistan suggest that nearly every daily CH-47 mission was loaded with some type of TS/MC cargo.²⁴

Air Force System/Assets

When unable to use organic airlift to fulfill missions, the Army uses the Joint theater airlift system, and missions are typically executed employing Air Force assets. Over the course of Operations Enduring and Iraqi Freedom, the Air Force has executed countless TS/MC movements supporting the Army, both in Iraq and Afghanistan. The primary Air Force aircraft tasked for intra-theater airlift was the C-130.

Army Limitations

There are limitations in using the current Army system and assets. In Iraq, most of the limitations arise from the C-23's low cargo capacity of only 7,000 pounds. Additionally, at the transitional airbase where the Air Force delivers cargo to the Army for delivery to the final destination, standard pallets unloaded off an Air Force C-130 must be reconfigured to be loaded on the C-23, slowing the delivery process. As for the system of moving TS/MC cargo, due to the fact that the Army has no standard prioritization, ground commanders may clash when one insists that his cargo is more important than another's cargo. This disparity could potentially be elevated if different units attempt to move TS/MC cargo in a last-minute situation when space

happens to be available on an aircraft.

In Afghanistan, where the CH-47 moves most of the TS/MC cargo, the major limitation lies in the slow speed and limited range of the helicopter. Considering a hypothetical 800-mile supply route from the point of debarkation to a more forward tactical location, using only a CH-47 to move cargo would take over six hours due to the helicopter's required fuel stops. If this were a common occurrence, which it surely could be in today's non-linear battlespace, the components of the CH-47 would suffer because it would be carrying heavy loads long distances. This type of airlift would be more suited to a fixed-wing aircraft.

Air Force Limitations

The limitations of the Joint theater system when employing Air Force assets lie in the long wait time after submitting a JMR and the lack of a prioritization system for designated TS/MC movements. When a JMR is submitted to the system, it competes with all other movement requests. As of yet, there is no simple way to expedite TS/MC cargo. Therefore, a JMR is expected to take at least 72 hours to execute. Also, even though the C-130 is the Air Force's primary intra-theater airlift platform, it is still too large for some forward airfields and does not have the short-field takeoff capability that the C-27J does.

SECTION 4: COMPARATIVE ANALYSIS/RESULTS USING C-27J AIRCRAFT

Army Aircraft and C-27J Comparison

The advantages of the C-27J over the Army cargo aircraft are easily seen when compared side-by-side. The C-27J Spartan's specifications and comparisons to the Army aircraft are shown in Table 2.

Table 2. C-27J, C-23, and CH-47 Specifications

	C-27J Spartan²⁵	C-23 Sherpa²⁶	CH-47 Chinook²⁷
Max speed	325 kts/374 mph	190 kts/218 mph	143 kts/164 mph
Max range	1,151 mi with 22,000 lb payload	225 mi	265 mi
Interior dimensions	28 ft x 11 ft x 7.5 ft (2453 cu ft)	36 ft x 5.5 ft x 6.5 ft (1287 cu ft)	30.5 ft x 7.5 ft x 6.5 ft (504 cu ft)
Wingspan	94 ft 2 in	74 ft 8 in	60 ft 0 in
Length	74 ft 6 in	58 ft 0.5 in	98 ft 10 in
Height	31 ft 8 in	16 ft 3 in	18 ft 11 in
Empty weight	37,479 lb	14,727 lb	23,401 lb
Max takeoff weight	67,241 lb	22,900 lb	50,000 lb
Max cargo weight	25,353 lb	7,000 lb	24,000 lb

Although the C-27J's maximum cargo weight barely surpasses that of the CH-47, its range exceeds that of the helicopter by over four times. Additionally, the C-27J's maximum speed is over twice that of the CH-47's. Therefore, though the cargo delivered by the C-27J may be the same as that delivered by the CH-47, it can be expected that the cargo would be delivered in at least half the time, and if the distance was outside the CH-47's maximum range, it would be delivered even faster due to the necessity of the helicopter to stop and refuel.

The differences between the C-27J and the C-23 Sherpa are even more significant. Although the Sherpa flies slightly faster than the CH-47, it can only carry 7,000 pounds. For cargo movements of 7,000 pounds or less, the C-27J would still move the cargo in 58 percent of the time of the C-23. For any movements exceeding 7,000 pounds up to its maximum cargo weight over the same distance, the C-27J would only require one flight, while the Sherpa would

require two or more. At best, moving the maximum cargo weight of the C-27J to its maximum range would either require four C-23s and at least twice the time, including the five refueling stops, or require one C-23 to fly four round trips with the same refueling stops. Considering that the Army routinely deployed 14-16 C-23s for TS/MC missions in Operation Iraqi Freedom and applying the above calculations, one could deduce that with the decrease in movement time with a larger, more capable aircraft such as the C-27J, the number of aircraft required to support the mission would be halved, if not quartered. The efficiency of the C-27J over either Army aircraft is obvious.

Applying the capability of the C-27J to the TS/MC airlift requests of the above Army units, one can see the advantages of having the aircraft available. First, this paper will analyze employing Air Force C-27Js as Army-directed assets, as the concept of employment suggests. Next, this paper will analyze keeping the C-27Js in the common-user pool, tasked by the theater airlift system.

Hypothetical Use of the C-27J for Army Units' TS/MC Airlift

The USAF Direct Support of USA Time Sensitive/Mission Critical Concept of Employment (CONEMP), signed by the Vice Chiefs of Staff of both the Air Force and Army in 2009, addresses the employment of the C-27J as a direct support asset. The CONEMP states the “Combatant Commander (CCDR) should delegate TACON of specific Air Force forces for the TS/MC mission to the COMARFOR (Commander Army Forces) who will exercise TACON of those assets through the designated senior Army aviation authority.”²⁸ In other words, breaking with Service doctrine examined previously in this paper, the Air Force C-27J would essentially be assigned to and controlled by an Army commander. Previously, Army and Air Force leadership had been resistant to this arrangement, expressed in responses from the Army and Air

Force Vice Chiefs of Staff to The Honorable Carl Levin's letter asking for reasons to continue the JCA program. The Vice Chiefs' responses fell in line with established doctrine: the Air Force provides general support to the theater, while Army organic airlift is responsible to deliver cargo the "last tactical mile."²⁹ Applying the CONEMP to recent operations, however, reveals increases in effectiveness and efficiency of TS/MC movements.

Examining the Army units' TS/MC movements referenced above, assigning the C-27J to directly support the Army commanders would reduce the time required to move cargo to the end user. Assuming that the TS/MC rate remained at about 50 per month, there are several different methods in which one could calculate the increase in effectiveness and efficiency of using the C-27J. First, assuming that all cargo loads are less than the C-23's 7,000-pound maximum, and given that the C-27J flies 171% faster than the C-23, a 225-mile max-range movement by a C-23 would be expected to arrive in 71 minutes, whereas movement by a C-27J would take 30 minutes less. Using that time-savings of 30 minutes per flight, over 50 monthly sorties the Army would save 25 hours of movement time. For each movement longer than 225 miles, the time savings would be even greater because the C-23 would need to make fuel stops. If a cargo movement was greater than 7,000 pounds but less than the C-27J's maximum cargo weight of about 25,000 pounds, it would take at least two C-23s, but only one C-27J. Conceivably, for all 7,000-pound and greater movements, the number of required aircraft and amount of time would be at least halved. Since the focus for TS/MC movements is effectiveness, this time-savings cannot be ignored. Additionally, if the C-27Js were used for the larger cargo movements, the Army would not have to rely on the longer Joint request process as much or tax its overworked CH-47s. The C-23 could be used more effectively for the sub 7,000-pound missions, and the CH-47 could be better used for its designated purpose. Therefore, using the C-27J in concert with the other

available Army airlift under the Army commanders' control would increase efficiency and effectiveness.

Hypothetical Use of the C-27J Only in the Joint Theater Airlift System

Employing the C-27J as part of the current common-user pool might increase efficiency for the common user, but it would not increase effectiveness for Army TS/MC missions. If C-27Js were part of the common-user pool, their missions would likely be assigned just like every other theater airlift mission—after being prioritized by the CDDOC and then added to the ATO. As discussed previously, producing an ATO is a 72-hour process, and due to the prioritization during that process that occurs outside of Army influence, an Army commander would not know when he could expect his cargo to be moved. To avoid that wait time, an Army commander might opt to simply use the available C-23s or CH-47s, therefore making the availability of the C-27Js irrelevant. However, reserving C-27Js for TS/MC movements within the theater airlift system could result in more timely, effective movements. By separating the C-27J aircraft, or a portion thereof, from the common-user pool for TS/MC missions, an Army commander's knowledge of the aircraft's availability could influence his decision to seek movement by those means. Separating the C-27Js from the common-user pool would require a separate prioritization system for TS/MC missions.

SECTION 5: CONCLUSION

Conclusions

For full effectiveness, the Army commander needs to retain tactical control of the C-27J aircraft assigned for direct support and TS/MC missions. Fortunately, the CONEMP provides for this, assigning TACON to the COMARFOR through the designated senior Army aviation authority. The Direct Support CONEMP is a work-in-progress, but as Army and Air Force

leadership—as well as the deployed units—continues to work together toward a common goal, Air Force support of the Army’s TS/MC movements will become simpler and more routine.

Next, adding a standard prioritization method to Army TS/MC movements would result in a faster, more effective system. In 2009, Headquarters Air Mobility Command's Test and Evaluation Squadron conducted a test of the Direct Support TS/MC CONEMP where two Air Force C-130s and four aircrews were placed under tactical control of an Army Combat Aviation Brigade (CAB) commander for 60 days. Although the test utilized C-130s, it was designed in order to ensure that the Army and Air Force could successfully execute the deployment of the C-27J to the operational theater. One of the more notable conclusions from the test report was that the Army is not standardized in its process for determining airlift priority, i.e. every Army aviation unit commander is free to create his own.³⁰ With no standardization, the Division planner was forced to determine which missions were the lowest priorities, and if sufficient airlift was not available to support all the requests, the low-priority missions were not supported. “If his interpretation was wrong, he would be notified by a higher ranking officer who would realign his interpretation of priorities.”³¹ Additionally, multiple senior officers could call and realign priorities. This sometimes occurred after missions had already been finalized and tasked, requiring subsequent modification and re-tasking. The CONEMP test, therefore, recommended that the Army create a written, formal, standardized priority system for TS/MC airlift.

Fortunately, CENTCOM already employs a prioritization system that could be modified and applied to Army airlift movements to decrease confusion and increase effectiveness. The 17-priority system is shown in Table 3.

Airlift Priority	Airlift Cargo or Passenger
1a 1b	Congressional delegations, Presidential directions, Department of State or Defense missions, as directed by CENTCOM
2	Combat and combat support operational requirements, aeromedical evacuations; emergency immediate medical shipments
3	Coalition human remains
4	Emergency ammunition; emergency medical supplies; combat sustainment; medical attendants returning to the CENTCOM AOR
5	Mail; Joint Operational Planning and Execution; various personnel movements
6	CENTCOM intratheater letters of intent; designated distinguished visitors and entertainment tours
7	Routine enemy prisoners of war, detainees, and escorts
8	Couriers (classified/financial); military intelligence working dogs
9	Fresh fruits and vegetables
10	Unit moves; all other sustainment cargo, including backlog
11	07 and 06 and civilian equivalent space booking
12	Individual passengers and U.S. embassy and operations support center trainers
13	Humanitarian assistance and combat munitions order
14	CENTCOM-sponsored exercises
15	Commercial contract support (vehicle drivers, communication technology)
16	Public affairs office and media "personalities"
17	Non-CENTCOM-sponsored exercises

Table 3. CENTCOM Intra-theater Airlift Priorities³²

This prioritization is utilized in determining the mission priority of common-user aircraft; therefore, it does not apply to organic Army airlift. However, borrowing from this model and applying it to TS/MC movements, one could easily create an applicable priority system. For example, considering that TS/MC airlift movements are essential to mission success, priorities two, three, and four could be written into eight separate priorities, thereby further delineating priority and making selection of a priority more standardized. Because Army commanders would be selecting a priority based on an objective definition, the subjectivity of Division airlift planners would be limited.

At a more focused level, a priority system is already established regarding Aeromedical Evacuation missions. According to the Joint publication *Worldwide Aeromedical Evacuation*,

patients are classified as “Urgent,” for immediate evacuation to save life or limb; “Priority,” for pickup within 24 hours; and “Routine,” for patients that require pickup within 72 hours.³³ Here, a time frame is established, which results in more distinction. Army ground commanders could utilize similar priority levels for TS/MC airlift, depending on the urgency of the movement. Perhaps an “Urgent” movement would be one that if not executed immediately would result in higher losses of Soldiers' lives in combat. “Priority” and “Routine” movements would then be less time-sensitive and less mission-critical, but still require expeditious movement. Conceivably, “Routine” airlift could be fulfilled with common-user assets through the Joint system. Army leadership would need to determine the number of levels and the time limits associated with those levels.

Next, supporting the Army's TS/MC requests with the C-27J could be accomplished by modifying the current theater airlift system. Borrowing from the Army airlift request system, a more direct, timely method to fulfill such missions could be developed. For instance, instead of including TS/MC movements with all the other theater airlift requests, they could be vetted separately, even within the current 72-hour planning cycle. TS/MC missions could then be assigned to C-27J or other suitable aircraft. In addition, similar to the Army process, the user or CDDOC should be able to communicate directly with the theater airlift units to discover “space available” on already tasked missions. This would prevent the TS/MC movement request from being lost in the theater system and also avoid the 72-hour process, while maximizing effectiveness in getting the cargo to its destination. Since the C-27J has a greater capacity than the oft-used C-23, it can be expected that more space would be available on already tasked missions.

Recommendations

Based on these conclusions, this research leads to the following recommendations:

1. The Combined Forces Air Component Commander should assign a number of C-27J Spartan aircraft to directly support Army TS/MC missions. Army and Air Force leadership will need to evaluate what the most effective number of C-27Js would be, dependent on the type and size of the conflict.

2. The Army should develop a standardized prioritization method for TS/MC air movements. Development of a prioritization method for TS/MC air movements would better communicate the urgency of the movement to the planners and assigned Air Force C-27J aircrews. The Army could use aeromedical evacuation priorities as a model.

3. The Joint theater airlift system should be modified to examine TS/MC requests separately from the common-user system. Vetting TS/MC missions separately would highlight their urgency and allow for movements to be made faster. Also, open communication between Army units, CDDOC, and C-27J units should be encouraged to allow for more “space available” movements.

The C-27J Spartan is a very capable aircraft. The increased range and cargo capacity over its Army counterparts is the key to its success, as long as Army and Air Force leadership continue to work together toward the perfect system, where “Joint” is not just an idea, but a practice.

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APPENDIX

AFDD	Air Force Doctrine Document
AMD	Air Mobility Division
AMR	Air Movement Request
ATO	Air Tasking Order
BCT	Brigade Combat Team
CAB	Combat Aviation Brigade
CAOC	Combined Air Operations Center
CCDR	Combatant Commander
CDDOC	CENTCOM Deployment Distribution Operations Center
CFACC	Combined Forces Air Component Commander
COMARFOR	Commander Army Forces
CONEMP	Concept of employment
FCA	Future Cargo Aircraft
JCA	Joint Cargo Aircraft
JLC	Joint Logistics Center
JMR	Joint Movement Request
JROC	Joint Requirements Oversight Council
LCA	Light Cargo Aircraft
MC	Mission-critical
MCTs	Mission Control Teams
QRM	Quadrennial Roles and Missions Review Report
TS	Time-sensitive

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